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Editorial

Vaginal Cleansing and the Gold Standard

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In this issue of the *Journal*, Bakr and Karkour[1] present their report on the efficacy of antiseptic swabbing of the birth canal during labor and delivery in a hospital in Alexandria, Egypt. Their objective was to prevent mortality and morbidity in newborns and their mothers. Simply put, the intervention worked well. In the control period, the neonatal mortality rate was 42/100 live births. With the intervention, they report a 75% reduction in infection-specific mortality and a 33% reduction in all-cause mortality. Sepsis-related admissions to the neonatal service declined 66%, although all-cause neonatal admission rates were essentially unchanged. Admissions for maternal complications were also lower.

Their results confirm findings from Malawi that we reported in 1997.[2] In our study, the in-hospital all-cause neonatal mortality rate was 37/1000 live births in the absence of this intervention. With the intervention, mortality rates from recognized sepsis in neonates decreased 67%, and all-cause mortality decreased by 22%. The intervention also lowered postpartum admissions for suspected sepsis (56%) and all-cause admissions (12%). Infections in newborns are difficult to recognize, and the impressive reduction in all-cause mortality seen in both studies suggests that infections in neonates were more common in our hospitals than we appreciated. Evidence for an impact on morbidity and mortality was less convincing for mothers than for newborns, but as in Egypt, the intervention also appeared to reduce maternal infectious complications and shorten hospital stays. Clearly, however, the intervention did not prevent mother-to-child HIV transmission in Malawi.[3] We now attribute most mother-to-child HIV transmission to transplacental microtransfusions and, thus, would not expect vaginal cleansing to work well.

It is reassuring but not surprising to see the close agreement between our studies. Both studies used the same intervention strategy, study design, and evaluation criteria. It is, however, disappointing that it has taken 8 years to see the initial results confirmed. Even now, I fear that the same uncompromising criteria used to criticize our study—that it was not blinded and not randomized[4]—will be applied to the Egyptian studies. Research in this topic was reviewed recently by Lumbiganon et al.[5] These reviewers adopted the gold standard of requiring blinded and randomized trials. They accepted only three studies, all done in the developed world.[6–8] These studies evaluated a lavage technique, and none showed significant differences when comparing antiseptic solutions with sterile water. The reviewers concluded that the efficacy of washing cleansing remains unproven and that more research needs to be done, essentially placing implementation of vaginal cleansing on hold once again.

Blinded and randomized studies are the gold standard for intervention trials, but they also have limitations. They are difficult and expensive to do, even in well-funded academic medical centers. Hospitals with such resources already provide patients with a relatively high standard of

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medical care, and in consequence, adverse delivery outcomes are unusual. For example, in the blinded, randomized studies of America and Europe,[6–8] the neonatal death rates in controls were 10% of those in the Malawi and Egyptian studies, yet those studies had relatively few subjects (about 1000 each), presumably limited by their complexity. In comparison, in Malawi we enrolled more than 7000 women, and in Egypt 4400 women were enrolled. The gold standard studies, having fewer participants and fewer adverse events, were underpowered to answer the essential questions being targeted, necessitating evaluation by indirect outcomes, such as endometritis and the frequency of antibiotic use (often given as prophylaxis). Furthermore, the events observed likely would have had very different causes in settings that provided advanced medical care than in a hospital in Malawi or Egypt—most pertinently, far lower infection rates. Finally, if blinded, randomized studies were conducted in a developing world facility, the added staff and oversight of the delivery and neonatal services would constitute uncontrolled interventions, rendering moot any operational conclusions of the results.

In the developing world, research is not funded by gold. In high-volume delivery services at resource-limited hospitals, blinded and randomized studies are nearly impossible. In our Malawi study, we averaged about 45 deliveries a day. Our deliveries were made by nurses and midwives, and newborn evaluation and care were provided by clinical officers, medical students, and housestaff. To have hope of success in developing areas, intervention trials need to stress uncomplicated designs, easily adopted changes, and unambiguous outcomes.

There were differences in the intervention used by the studies. In Malawi and Egypt, we used swabbing with disposable cotton balls soaked in 0.25% chlorhexidine and compared this procedure with doing nothing (which was standard procedure), an approach that cannot be blinded. The American and European studies used lavage of the birth canal with a chlorhexidine solution and compared the results with lavage with sterile water. Compared with swabbing, lavage is likely to be less effective in removing potentially infectious blood and mucus in the birth canal, but to the extent it helps, even sterile water lavage is an intervention compared with nothing at all. In contrast, swabbing requires readily available and cheap cotton balls, lavage requires syringes, catheters, and drainage basins, equipment that would not be available in delivery services in most developing areas. Even if they were provided, the busy delivery room staff in our hospital would have resisted the much more difficult task of manipulating these instruments and then cleaning them for reuse (itself a risky concept).

There is nothing new about the importance of sterility during delivery. Ignaz Semmelweis drew attention to the essential need for handwashing in preventing puerperal fevers more than 150 years ago. It seems intuitively logical that washing the birth canal would also reduce infection risk. Indeed, even before we studied vaginal swabbing in Africa, vaginal lavage with chlorhexidine had been shown in Europe to be effective in reducing neonatal morbidity due to group B streptococcus.[9,10] Logic needs to be proven, of course, and critically, safety must be demonstrated. This done and now confirmed, hospitals in the developing world should consider whether this idea can be implemented on a wider scale. It is simply too important to let this concept slip back into obscurity.

Should there be reservations? Of course. No procedural changes should be adopted without continuing scrutiny. Fortunately, the minimum surveillance necessary to monitor its efficacy is already in place in larger institutions: monitoring the incidence of neonatal and maternal outcomes. Optimal delivery systems need to be further evaluated. Specifically, one worries about the introduction of organisms resistant to the antiseptic agent, especially when it is dispensed in bulk. Open containers of antiseptics and soaps can be breeding grounds for resistant bacteria, such as *Pseudomonas* and *Proteus*. Anticipating this problem, one might recommend dispensing the cleansing solution in individual-use packets if that can be done economically. Surveillance for specific causes of infection may be difficult in resource-poor areas, but where possible, the causes of neonatal sepsis should be monitored, and antibiotic sensitivity should be assessed because these patterns will influence choices for antibiotic coverage of suspected sepsis.

These research needs should not delay implementation of vaginal swabbing on a wider scale. It is safe, simple, quick, and economical, and it is a concept readily understood even by minimally

trained birth attendants working in outpatient delivery clinics. If there are lingering doubts, let the research community come up with the gold for further research—but let them do it soon. The neonatal period is among the most hazardous few days in life. Clearly, vaginal cleansing is only a partial answer to the complex issues surrounding maternal and child public health, but it deserves consideration. Saving newborn lives and reducing morbidity in both infants and mothers is a critical first step.

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